

IN THE CLAIMS

Please cancel Claims 9, 10, 19, 20 and 22 without prejudice to or disclaimer of the subject matter contained therein.

Please amend Claims 1-3, 11, 15-18, 21, 23-30 and 52 as follows.

1. (Currently Amended) An image pick-up apparatus comprising:

a plurality of pixels, each pixel including a photoelectric conversion element and a switching element, arranged on an insulating substrate;

a wavelength converter positioned and configured to convert ~~for converting an incident radiation to a light having a wavelength detectable by a~~ at least one of the photoelectric conversion element on an insulating substrate on which plural photoelectric conversion elements and plural switching elements are deposited; elements;

a protective layer arranged on the insulating substrate so as to cover the plurality of pixels; and

a flattening layer arranged at least on the plurality of pixels so as to be positioned upon a surface of the protective layer;

wherein the wavelength converter is arranged by being deposited on a ~~the~~ flattening layer and comprises a scintillator which comprises a columnar crystal, and

wherein the ~~plural photoelectric conversion elements, the plural switching elements~~ plurality of pixels, the protective layer, and the flattening layer are situated between the insulating substrate and the wavelength converter.

2. (Currently Amended) An image pick-up apparatus according to Claim 1, wherein the flattening layer is obtained by flattening a the protective layer provided on the insulating substrate.

3. (Currently Amended) An image pick-up apparatus according to Claim 1, wherein the flattening layer ~~is provided on a protective layer on the insulating substrate~~ comprises a polyimide resin.

4. (Original) An image pick-up apparatus according to Claim 1, wherein a second flattening layer is provided on the wavelength converter.

5. (Original) An image pick-up apparatus according to Claim 4, wherein the second flattening layer covers the end face of the wavelength converter.

6. (Original) An image pick-up apparatus according to Claim 1, wherein the surface of the wavelength converter is flattened.

7. (Original) An image pick-up apparatus according to Claim 4, wherein a light reflection film is provided on the second flattening layer.

8. (Original) An image pick-up apparatus according to Claim 6, wherein a light reflection film is provided on the flattened wavelength converter.

9-10. (Cancelled)

11. (Currently Amended) An image pick-up apparatus according to ~~Claim 9~~ Claim 1, wherein the scintillator comprises a CsI crystal.

12. (Original) An image pick-up apparatus according to Claim 7, wherein the light reflection film is made of an aluminum film.

13. (Original) An image pick-up apparatus according to Claim 8, wherein the light reflection film is made of an aluminum film.

14. (Original) An image pick-up apparatus according to Claim 8, having plural insulating substrates.

15. (Currently Amended) An image pick-up apparatus comprising: ~~comprising plural insulating substrates on which plural pairs of a photoelectric conversion element and a switching element are deposited,~~

~~wherein the plural insulating substrates comprise flattening layers on which a wavelength converter is deposited, and~~

~~wherein the photoelectric conversion element, the switching element, and the flattening layer are situated between the insulating substrate and the wavelength converter~~ comprising:

a plurality of insulating substrates arranged on a substrate;

a plurality of pixels, each pixel including a photoelectric conversion element and a switching element, arranged on each of the insulating substrates;

a wavelength converter configured and positioned to convert incident radiation to light having a wavelength detectable by at least one of the photoelectric conversion elements;

a protective layer arranged on at least one of the insulating substrates so as to cover the plurality of pixels on the at least one insulating substrate; and

a flattening layer arranged at least on the plurality of pixels on which the protective layer is arranged so as to be positioned upon a surface of the protective layer,

wherein the wavelength converter is arranged by being deposited on the flattening layer and comprises a scintillator which comprises a columnar crystal, and

wherein the plurality of pixels on the at least one insulating substrate, the protective layer, and the flattening layer are situated between the insulating substrate and the wavelength converter.

16. (Currently Amended) An image pick-up apparatus according to Claim 15, wherein a ~~second~~ the flattening layer is obtained by flattening the protective layer provided on the insulating substrate ~~wavelength converter~~.

17. (Currently Amended) An image pick-up apparatus according to ~~Claim 16~~ Claim 15, wherein the ~~second flattening layer covers the end face of the wavelength converter~~ comprises a polyimide resin.

18. (Currently Amended) An image pick-up apparatus according to ~~Claim 16~~ Claim 15, wherein ~~a light reflection film is provided on the second flattening layer~~ is arranged on the plurality of insulating substrates.

19-20. (Cancelled)

21. (Currently Amended) An image pick-up apparatus according to ~~Claim 20~~ Claim 15, wherein the scintillator ~~layer~~ comprises a CsI crystal.

22. (Cancelled)

23. (Currently Amended) An image pick-up system comprising:
an image pick-up apparatus ~~provided with a wavelength converter for converting an incident radiation to a light having a wavelength detectable by a photoelectric conversion element on an insulating substrate on which plural photoelectric conversion elements and plural switching elements are deposited; including:~~

a plurality of pixels, each pixel producing a signal and including a photoelectric conversion element and a switching element, arranged on an insulating substrate;

a wavelength converter configured and positioned to convert incident radiation to light having a wavelength detectable by at least one of the photoelectric conversion elements;

a protective layer arranged on the insulating substrate so as to cover the plurality of pixels; and

a flattening layer arranged at least on the plurality of pixels so as to be positioned upon a surface of the protective layer;

wherein the wavelength converter is arranged by being deposited on a the flattening layer and comprises a scintillator which comprises a columnar crystal, and

wherein the ~~plural photoelectric conversion elements, the plural switching elements~~ plurality of pixels, the protective layer, and the flattening layer are situated between the insulating substrate and the wavelength converter; ~~converter, said system comprising:~~

a signal processor processing configured to process ~~means for processing~~ the signal from the image pick-up apparatus; and

a display configured to display ~~means for displaying~~ the processed signal from the signal processor processing means.

24. (Currently Amended) An image pick-up system according to Claim 23, further comprising a telecommunication device configured to transfer ~~means for transferring~~ the signal from the signal processor processing means.

25. (Currently Amended) An image pick-up apparatus system to Claim 23, further comprising a recorder configured to record ~~recording means for recording~~ the signal from the signal processor processing means.

26. (Currently Amended) An image pick-up system according to Claim 23, further comprising a storage device configured to store ~~storage means for storing~~ the signal from the signal processor ~~processing means~~.

27. (Currently Amended) An image pick-up system comprising:
~~an image pick-up apparatus comprising plural insulating substrates on which plural photoelectric conversion elements and plural switching elements are deposited, a flattening layer being deposited on the plural insulating substrates and a wavelength converter being deposited on the flattening layer, with the photoelectric conversion elements, the switching elements, and flattening layer being situated between the insulating substrates and the wavelength converter, said system comprising:~~

a plurality of insulating substrates arranged on a substrate;
a plurality of pixels, each pixel producing a signal and including a photoelectric conversion element and a switching element, arranged on each of the insulating substrates;
a wavelength converter configured and positioned to convert incident radiation to light having a wavelength detectable by at least one of the photoelectric conversion elements;
a protective layer arranged on at least one of the insulating substrates so as to cover the plurality of pixels on the at least one insulating substrate; and
a flattening layer arranged at least on the plurality of pixels on which the protective layer is arranged so to be positioned upon a surface of the protective layer;
wherein the wavelength converter is arranged by being deposited on the flattening layer and comprises a scintillator which comprises a columnar crystal, and

wherein the plurality of pixels on the at least one insulating layer, the protective layer, and the flattening layer are situated between the insulating substrate and the wavelength converter;

a signal processor configured to process ~~processing means for processing~~ the signal ~~from the image pick-up apparatus~~; and

a display ~~means for displaying~~ configured to display the processed signal from the signal processing means.

28. (Currently Amended) An image pick-up system according to Claim 27, further comprising a recorder configured to record ~~recording means for recording~~ the processed signal from the signal processor ~~processing means~~.

29. (Currently Amended) An image pick-up system according to Claim 27, further comprising a telecommunication device configured to transfer ~~means for transferring~~ the signal from the signal processor ~~processing means~~.

30. (Currently Amended) An image pick-up system according to Claim 27, further comprising a storage device configured to store ~~means for storing~~ the signal from the signal processor ~~processing means~~.

31.-51. (Canceled)

52. (Currently Amended) An image pick-up apparatus ~~comprising a wavelength converter for converting an incident radiation to a light having a wavelength detectable by a photoelectric conversion element on an insulating substrate on which plural photoelectric conversion elements and switching elements are deposited,~~ comprising:

a plurality of pixels, each pixel including a photoelectric conversion element and a switching element, arranged on an insulating substrate;

a wavelength converter configured and positioned to convert incident radiation to light having a wavelength detectable by at least one of the photoelectric conversion elements;

a protective layer arranged on the insulating substrate so as to cover the plurality of pixels; and

a flattening layer arranged at least on the plurality of pixels so as to be positioned upon a surface of the protective layer;

wherein the wavelength converter is arranged by being deposited on a the flattening layer and comprises a scintillator which comprises a columnar crystal,

wherein the ~~plural photoelectric conversion elements, the plural switching elements~~ plurality of pixels, the protective layer, and the flattening layer are situated between the insulating substrate and wavelength converter, and

wherein the photoelectric conversion elements comprise ~~non-single crystalline~~ non-crystalline semiconductor material.

53. (Previously Presented) The image pick-up apparatus according to Claim 52, wherein the photoelectric conversion elements comprise an amorphous silicon film.